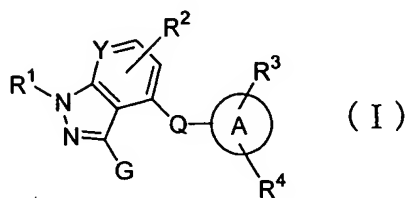


## CLAIMS

1. A nitrogen-containing fused-ring derivative represented by the following general formula (I):



wherein

$R^1$  represents a hydrogen atom, a C<sub>1-6</sub> alkyl group, a halo(C<sub>1-6</sub> alkyl) group, a hydroxy(C<sub>1-6</sub> alkyl) group, a dihydroxy(C<sub>1-6</sub> alkyl) group, a C<sub>1-6</sub> alkoxy(C<sub>1-6</sub> alkyl) group, a C<sub>2-7</sub> alkoxy carbonyl(C<sub>1-6</sub> alkyl) group, a carboxy(C<sub>1-6</sub> alkyl) group, a C<sub>2-6</sub> alkenyl group,  $-J-N(R^5)-Z^1$ ,  $-J-CON(R^5)-Z^1$ , or any of the following substituents (a) to (d) which may have any 1 to 3 substituents selected from the following substituent group  $\alpha$  on the ring;

15 (a) a C<sub>3-7</sub> cycloalkyl group, (b) a C<sub>3-7</sub> cycloalkyl(C<sub>1-6</sub> alkyl) group, (c) a C<sub>6-10</sub> aryl group or (d) a C<sub>1-6</sub> aryl(C<sub>6-10</sub> alkyl) group,

$R^2$  represents a hydrogen atom, a halogen atom or a C<sub>1-6</sub> alkyl group;

20  $R^3$  and  $R^4$  independently represent a hydrogen atom, a hydroxy group, a halogen atom, a C<sub>1-6</sub> alkyl group, a C<sub>2-6</sub> alkenyl group, a C<sub>2-6</sub> alkynyl group, a C<sub>1-6</sub> alkoxy group, a C<sub>2-6</sub> alkenyloxy group, a C<sub>1-6</sub> alkylthio group, a C<sub>2-6</sub> alkenylthio group, a halo(C<sub>1-6</sub>

alkyl) group, a halo(C<sub>1-6</sub> alkoxy) group, a halo(C<sub>1-6</sub> alkylthio) group, a hydroxy(C<sub>1-6</sub> alkyl) group, a hydroxy(C<sub>2-6</sub> alkenyl) group, a hydroxy(C<sub>1-6</sub> alkoxy) group, a hydroxy(C<sub>1-6</sub> alkylthio) group, a carboxy group, a carboxy(C<sub>1-6</sub> alkyl) group, a carboxy(C<sub>2-6</sub> alkenyl) group, a carboxy(C<sub>1-6</sub> alkoxy) group, a carboxy(C<sub>1-6</sub> alkylthio) group, a C<sub>2-7</sub> alkoxy carbonyl group, a C<sub>2-7</sub> alkoxy carbonyl(C<sub>1-6</sub> alkyl) group, a C<sub>2-7</sub> alkoxy carbonyl(C<sub>2-6</sub> alkenyl) group, a C<sub>2-7</sub> alkoxy carbonyl(C<sub>1-6</sub> alkoxy) group, a C<sub>2-7</sub> alkoxy carbonyl(C<sub>1-6</sub> alkylthio) group, a C<sub>1-6</sub> alkylsulfinyl group, a C<sub>1-6</sub> alkylsulfonyl group, -U-V-W-N(R<sup>6</sup>)-Z<sup>2</sup>, or any of the following substituents (i) to (xxviii) which may have any 1 to 3 substituents selected from the following substituent group  $\alpha$  on the ring;

(i) a C<sub>6-10</sub> aryl group, (ii) C<sub>6-10</sub> aryl-O-, (iii) C<sub>6-10</sub> aryl-S-, (iv) a C<sub>6-10</sub> aryl(C<sub>1-6</sub> alkyl) group, (v) a C<sub>6-10</sub> aryl(C<sub>1-6</sub> alkoxy) group, (vi) a C<sub>6-10</sub> aryl(C<sub>1-6</sub> alkylthio) group, (vii) a heteroaryl group, (viii) heteroaryl-O-, (ix) heteroaryl-S-, (x) a heteroaryl(C<sub>1-6</sub> alkyl) group, (xi) a heteroaryl(C<sub>1-6</sub> alkoxy) group, (xii) a heteroaryl(C<sub>1-6</sub> alkylthio) group, (xiii) a C<sub>3-7</sub> cycloalkyl group, (xiv) C<sub>3-7</sub> cycloalkyl-O-, (xv) C<sub>3-7</sub> cycloalkyl-S-, (xvi) a C<sub>3-7</sub> cycloalkyl(C<sub>1-6</sub> alkyl) group, (xvii) a C<sub>3-7</sub> cycloalkyl(C<sub>1-6</sub> alkoxy) group, (xviii) a C<sub>3-7</sub> cycloalkyl(C<sub>1-6</sub> alkylthio) group, (xix) a heterocycloalkyl group, (xx) heterocycloalkyl-O-, (xxi) heterocycloalkyl-S-, (xxii) a heterocycloalkyl(C<sub>1-6</sub> alkyl) group, (xxiii) a heterocycloalkyl(C<sub>1-6</sub> alkoxy) group, (xxiv) a heterocycloalkyl(C<sub>1-6</sub> alkylthio) group, (xxv) an aromatic

cyclic amino group, (xxvi) an aromatic cyclic amino(C<sub>1-6</sub> alkyl) group, (xxvii) an aromatic cyclic amino(C<sub>1-6</sub> alkoxy) group, or (xxviii) an aromatic cyclic amino(C<sub>1-6</sub> alkylthio) group,

J represents a C<sub>1-6</sub> alkylene group which may have a hydroxy  
5 group, or a C<sub>2-6</sub> alkenylene group;

U represents -O-, -S- or a single bond and with the proviso that at least one of V and W is not a single bond when U is -O- or -S-);

V represents a C<sub>1-6</sub> alkylene group which may have a hydroxy  
10 group, a C<sub>2-6</sub> alkenylene group or a single bond;

W represents -CO-, -SO<sub>2</sub>-, -C(=NH)- or a single bond;

Z<sup>1</sup> and Z<sup>2</sup> independently represent a hydrogen atom, a C<sub>2-7</sub> alkoxy carbonyl group, a C<sub>6-10</sub> aryl(C<sub>2-7</sub> alkoxy carbonyl) group, a formyl group, -R<sup>A</sup>, -COR<sup>B</sup>, -SO<sub>2</sub>R<sup>B</sup>, -CON(R<sup>C</sup>)R<sup>D</sup>, -CSN(R<sup>C</sup>)R<sup>D</sup>,  
15 -SO<sub>2</sub>NHR<sup>A</sup> or -C(=NR<sup>E</sup>)N(R<sup>F</sup>)R<sup>G</sup>;

R<sup>5</sup>, R<sup>6</sup>, R<sup>A</sup>, R<sup>C</sup> and R<sup>D</sup> independently represent a hydrogen atom, a C<sub>1-6</sub> alkyl group which may have any 1 to 5 substituents selected from the following substituent group β or any of the following substituents (xxix) to (xxxii) which may have any 1  
20 to 3 substituents selected from the following substituent group α;  
α;

(xxix) a C<sub>6-10</sub> aryl group, (xxx) a heteroaryl group, (xxxi) a C<sub>3-7</sub> cycloalkyl group or (xxxii) a heterocycloalkyl group,  
or both of Z<sup>1</sup> and R<sup>5</sup> or both of Z<sup>2</sup> and R<sup>6</sup> bind together  
25 with the neighboring nitrogen atom to form an aliphatic cyclic amino group which may have any 1 to 3 substituents selected from the following substituent group α;

or  $R^C$  and  $R^D$  bind together with the neighboring nitrogen atom to form an aliphatic cyclic amino group which may have any 1 to 3 substituents selected from the following substituent group  $\alpha$ ;

5  $R^B$  represents a  $C_{2-7}$  alkoxy carbonyl group, a  $C_{1-6}$  alkylsulfonylamino group, a  $C_{6-10}$  arylsulfonylamino group, a  $C_{1-6}$  alkyl group which may have any 1 to 5 substituents selected from the following substituent group  $\beta$  or any of the following substituents (xxxiii) to (xxxvi) which may have any 1 to 3  
10 substituents selected from the following substituent group  $\alpha$ ;

(xxxiii) a  $C_{6-10}$  aryl group, (xxxiv) a heteroaryl group, (xxxv) a  $C_{3-7}$  cycloalkyl group or (xxxvi) a heterocycloalkyl group,

$R^E$ ,  $R^F$  and  $R^G$  independently represent a hydrogen atom,  
15 a cyano group, a carbamoyl group, a  $C_{2-7}$  acyl group, a  $C_{2-7}$  alkoxy carbonyl group, a  $C_{6-10}$  aryl ( $C_{2-7}$  alkoxy carbonyl) group, a nitro group, a  $C_{1-6}$  alkylsulfonyl group, a sulfamoyl group, a carbamimidoyl group or a  $C_{1-6}$  alkyl group which may have any 1 to 5 substituents selected from the following substituent group  
20  $\beta$ ;

or  $R^E$  and  $R^F$  bind together to form an ethylene group;

or  $R^F$  and  $R^G$  bind together with the neighboring nitrogen atom to form an aliphatic cyclic amino group which may have a substituent selected from the following substituent group  $\alpha$ ;

25 Y represents CH or N;

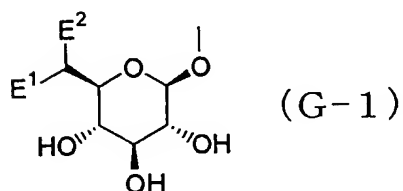
Q represents  $-C_{1-6}$  alkylene-,  $-C_{2-6}$  alkenylene-,  $-C_{2-6}$  alkynylene-,  $-C_{1-6}$  alkylene-O-,  $-C_{1-6}$  alkylene-S-, -O- $C_{1-6}$

alkylene-, -S-C<sub>1-6</sub> alkylene-, -C<sub>1-6</sub> alkylene-O-C<sub>1-6</sub> alkylene-,  
 -C<sub>1-6</sub> alkylene-S-C<sub>1-6</sub> alkylene-, -CON(R<sup>7</sup>)-, -N(R<sup>7</sup>)CO-, -C<sub>1-6</sub>  
 alkylene-CON(R<sup>7</sup>)- or -CON(R<sup>7</sup>)-C<sub>1-6</sub> alkylene-;

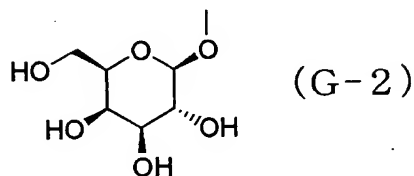
R<sup>7</sup> represents a hydrogen atom or a C<sub>1-6</sub> alkyl group;

5 ring A represents a C<sub>6-10</sub> aryl group or a heteroaryl group;

G represents a group represented by a formula:



or a formula:



10 E<sup>1</sup> represents a hydrogen atom, a fluorine atom or  
 a hydroxy group;

E<sup>2</sup> represents a hydrogen atom, a fluorine atom, a  
 methyl group or a hydroxymethyl group;

[substituent group α]

15 a halogen atom, a hydroxy group, an amino group, a C<sub>1-6</sub> alkyl  
 group, a C<sub>1-6</sub> alkoxy group, a halo(C<sub>1-6</sub> alkyl) group, a halo(C<sub>1-6</sub>  
 alkoxy)group, a hydroxy(C<sub>1-6</sub> alkyl) group, a C<sub>2-7</sub>  
 alkoxycarbonyl(C<sub>1-6</sub> alkyl) group, a hydroxy(C<sub>1-6</sub> alkoxy) group,  
 an amino(C<sub>1-6</sub> alkyl) group, an amino(C<sub>1-6</sub> alkoxy) group, a mono  
 20 or di(C<sub>1-6</sub> alkyl)amino group, a mono or di[hydroxy(C<sub>1-6</sub>  
 alkyl)]amino group, a C<sub>1-6</sub> alkylsulfonyl group, a C<sub>1-6</sub>

alkylsulfonylamino group, a C<sub>1-6</sub> alkylsulfonylamino (C<sub>1-6</sub> alkyl) group, a carboxy group, a C<sub>2-7</sub> alkoxy carbonyl group, a sulfamoyl group and  $-\text{CON}(\text{R}^{\text{H}})\text{R}^{\text{I}}$

[substituent group  $\beta$ ]

- 5 a halogen atom, a hydroxy group, an amino group, a C<sub>1-6</sub> alkoxy group, a C<sub>1-6</sub> alkylthio group, a halo (C<sub>1-6</sub> alkoxy) group, a halo (C<sub>1-6</sub> alkylthio) group, a hydroxy (C<sub>1-6</sub> alkoxy) group, a hydroxy (C<sub>1-6</sub> alkylthio) group, an amino (C<sub>1-6</sub> alkoxy) group, an amino (C<sub>1-6</sub> alkylthio) group, a mono or di (C<sub>1-6</sub> alkyl) amino group, 10 a mono or di [hydroxy (C<sub>1-6</sub> alkyl)] amino group, an ureido group, a sulfamide group, a mono or di (C<sub>1-6</sub> alkyl) ureido group, a mono or di [hydroxy (C<sub>1-6</sub> alkyl)] ureido group, a mono or di (C<sub>1-6</sub> alkyl) sulfamide group, a mono or di [hydroxy (C<sub>1-6</sub> alkyl)] - sulfamide group, a C<sub>2-7</sub> acylamino group, an amino (C<sub>2-7</sub> acylamino) 15 group, a C<sub>1-6</sub> alkylsulfonyl group, a C<sub>1-6</sub> alkylsulfonylamino group, a carbamoyl (C<sub>1-6</sub> alkylsulfonylamino) group, a carboxy group, a C<sub>2-7</sub> alkoxy carbonyl group,  $-\text{CON}(\text{R}^{\text{H}})\text{R}^{\text{I}}$ , and any of the following substituents (xxxvii) to (xxxxviii) which may have any 1 to 3 substituents selected from the above substituent group 20  $\alpha$  on the ring;

- (xxxvii) a C<sub>6-10</sub> aryl group, (xxxviii) C<sub>6-10</sub> aryl-O-, (xxxix) a C<sub>6-10</sub> aryl (C<sub>1-6</sub> alkoxy) group, (xxxx) a C<sub>6-10</sub> aryl (C<sub>1-6</sub> alkylthio) group, (xxxxi) a heteroaryl group, (xxxxii) heteroaryl-O-, (xxxxiii) a C<sub>3-7</sub> cycloalkyl group, (xxxxiv) C<sub>3-7</sub> 25 cycloalkyl-O-, (xxxxv) a heterocycloalkyl group, (xxxxvi) heterocycloalkyl-O-, (xxxxvii) an aliphatic cyclic amino group or (xxxxviii) an aromatic cyclic amino group

$R^H$  and  $R^I$  independently represent a hydrogen atom or a C<sub>1-6</sub> alkyl group which may have any 1 to 3 substituents selected from the following substituent group  $\gamma$ ;

or both of  $R^H$  and  $R^I$  bind together with the neighboring  
 5 nitrogen atom to form an aliphatic cyclic amino group which may have any 1 to 3 substituents selected from the following substituent group  $\delta$ ;

[substituent group  $\gamma$ ]

a halogen atom, a hydroxy group, an amino group, a C<sub>1-6</sub>  
 10 alkoxy group, a halo(C<sub>1-6</sub> alkoxy) group, a hydroxy(C<sub>1-6</sub> alkoxy) group, an amino(C<sub>1-6</sub> alkoxy) group, a mono or di(C<sub>1-6</sub> alkyl)amino group, a mono or di[hydroxy(C<sub>1-6</sub> alkyl)]amino group, an ureido group, a sulfamide group, a mono or di(C<sub>1-6</sub> alkyl)ureido group, a mono or di[hydroxy(C<sub>1-6</sub> alkyl)]ureido group, a mono or di(C<sub>1-6</sub>  
 15 alkyl)sulfamide group, a mono or di[hydroxy(C<sub>1-6</sub> alkyl)]-sulfamide group, a C<sub>2-7</sub> acylamino group, an amino(C<sub>2-7</sub> acylamino) group, a C<sub>1-6</sub> alkylsulfonyl group, a C<sub>1-6</sub> alkylsulfonylamino group, a carbamoyl(C<sub>1-6</sub> alkylsulfonylamino) group, a carboxy group, a C<sub>2-7</sub> alkoxycarbonyl group and  $-\text{CON}(R^J)R^K$

20 [substituent group  $\delta$ ]

a halogen atom, a hydroxy group, an amino group, a C<sub>1-6</sub> alkyl group, a C<sub>1-6</sub> alkoxy group, a halo(C<sub>1-6</sub> alkyl) group, a halo(C<sub>1-6</sub> alkoxy) group, a hydroxy(C<sub>1-6</sub> alkyl) group, a C<sub>2-7</sub>  
 alkoxycarbonyl(C<sub>1-6</sub> alkyl) group, a hydroxy(C<sub>1-6</sub> alkoxy) group,  
 25 an amino(C<sub>1-6</sub> alkyl) group, an amino(C<sub>1-6</sub> alkoxy) group, a mono or di(C<sub>1-6</sub> alkyl)amino group, a mono or di[hydroxy(C<sub>1-6</sub> alkyl)]amino group, a C<sub>1-6</sub> alkylsulfonyl group, a C<sub>1-6</sub>

alkylsulfonylamino group, a C<sub>1-6</sub> alkylsulfonylamino (C<sub>1-6</sub> alkyl) group, a carboxy group, a C<sub>2-7</sub> alkoxy carbonyl group, a sulfamoyl group and  $-\text{CON}(\text{R}^{\text{J}})\text{R}^{\text{K}}$

$\text{R}^{\text{J}}$  and  $\text{R}^{\text{K}}$  independently represent a hydrogen atom or a C<sub>1-6</sub> alkyl group which may have any 1 to 3 substituents selected from a hydroxy group, an amino group, a mono or di (C<sub>1-6</sub> alkyl) amino group, a C<sub>2-7</sub> alkoxy carbonyl group and a carbamoyl group;

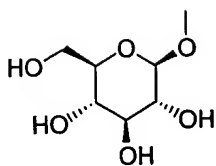
or both of  $\text{R}^{\text{J}}$  and  $\text{R}^{\text{K}}$  bind together with the neighboring nitrogen atom to form an aliphatic cyclic amino group which may have any 1 to 3 substituents selected from a hydroxy group, an amino group, a mono or di (C<sub>1-6</sub> alkyl) amino group, a C<sub>1-6</sub> alkyl group, a hydroxy (C<sub>1-6</sub> alkyl) group, a C<sub>2-7</sub> alkoxy carbonyl group, a C<sub>2-7</sub> alkoxy carbonyl (C<sub>1-6</sub> alkyl) group and a carbamoyl group, or a pharmaceutically acceptable salt thereof, or a prodrug thereof.

2. A nitrogen-containing fused-ring derivative as claimed in claim 1, wherein Q represents an ethylene group, or a pharmaceutically acceptable salt thereof, or a prodrug thereof.

3. A nitrogen-containing fused-ring derivative as claimed in claim 1, wherein Q represents a methylene group, or a pharmaceutically acceptable salt thereof, or a prodrug thereof.

4. A nitrogen-containing fused-ring derivative as claimed in any one of claims 1 to 3, wherein G represents a group represented by the formula:





, or a pharmaceutically acceptable salt thereof, or a prodrug thereof.

- 5 5. A nitrogen-containing fused-ring derivative as claimed in any one of claims 1 to 4, wherein ring A represents a group derived from a benzene ring, a pyridine ring, a pyrimidine ring, a pyrazine ring or a pyridazine ring, or a pharmaceutically acceptable salt thereof, or a prodrug thereof.

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6. A nitrogen-containing fused-ring derivative as claimed in claim 5, wherein the ring A represents a benzene ring, or a pharmaceutically acceptable salt thereof, or a prodrug thereof.

- 15 7. A nitrogen-containing fused-ring derivative as claimed in claim 5, wherein the ring A represents a pyridine ring, or a pharmaceutically acceptable salt thereof, or a prodrug thereof.

8. A nitrogen-containing fused-ring derivative as  
 20 claimed in claim 5, wherein  $R^3$  represents a hydrogen atom, a halogen atom or a  $C_{1-6}$  alkyl group;  $R^4$  represents a hydrogen atom, a hydroxy group, a halogen atom, a  $C_{1-6}$  alkyl group, a  $C_{1-6}$  alkoxy group, a  $C_{1-6}$  alkylthio group, a hydroxy( $C_{1-6}$  alkyl) group, a  $C_{3-7}$  cycloalkyl group, or  $-U^a-V^a-W^a-N(R^{6a})-Z^{2a}-$ ;  $U^a$   
 25 represents  $-O-$  or a single bond and with the proviso that at

least one of  $V^a$  and  $W^a$  does not represents a single bond when  $U^a$  represents  $-O-$ ;  $V^a$  represents a  $C_{1-6}$  alkylene group, a  $C_{2-6}$  alkenylene group or a single bond;  $W^a$  represents  $-CO-$  or a single bond;  $Z^{2a}$  represents a hydrogen atom,  $-R^{Aa}$ ,  $-CON(R^C)R^D$ , or  
 5  $-C(=NR^E)N(R^F)R^G$ ;  $R^{6a}$  and  $R^{Aa}$  independently represent a hydrogen atom, or a  $C_{1-6}$  alkyl group which may have any 1 to 5 groups selected from the following substituent group  $\beta$ ;  $R^C$  and  $R^D$  independently represent a hydrogen atom, a  $C_{1-6}$  alkyl group which may have any 1 to 5 groups selected from the following substituent  
 10 group  $\beta$ , or any of the following substituents (xxix) to (xxxii) which may have any 1 to 3 substituents selected from the following substituent group  $\alpha$ ;

(xxix) a  $C_{6-10}$  aryl group, (xxx) a heteroaryl group, (xxxii) a  $C_{3-7}$  cycloalkyl group or (xxxii) a heterocycloalkyl group,  
 15 or  $R^C$  and  $R^D$  bind together with the neighboring nitrogen atom to form an aliphatic cyclic amino group which may have any 1 to 3 substituents selected from the following substituent group  $\alpha$ ;  $R^E$ ,  $R^F$  and  $R^G$  independently represent a hydrogen atom, a cyano group, a carbamoyl group, a  $C_{2-7}$  acyl group, a  $C_{2-7}$  alkoxy carbonyl group, a  $C_{6-10}$  aryl( $C_{2-7}$  alkoxy carbonyl) group, a nitro group,  
 20 a  $C_{1-6}$  alkylsulfonyl group, a sulfamoyl group, a carbamimidoyl group or a  $C_{1-6}$  alkyl group which may have any 1 to 5 substituents selected from the following substituent group  $\beta$ ; or  $R^E$  and  $R^F$  bind together to form an ethylene group; or  $R^F$  and  $R^G$  bind together  
 25 with the neighboring nitrogen atom to form an aliphatic cyclic amino group which may have a substituent selected from the following substituent group  $\alpha$ ;

[substituent group  $\alpha$ ]

a halogen atom, a hydroxy group, an amino group, a C<sub>1-6</sub> alkyl group, a C<sub>1-6</sub> alkoxy group, a halo(C<sub>1-6</sub> alkyl) group, a halo(C<sub>1-6</sub> alkoxy) group, a hydroxy(C<sub>1-6</sub> alkyl) group, a C<sub>2-7</sub> alkoxycarbonyl(C<sub>1-6</sub> alkyl) group, a hydroxy(C<sub>1-6</sub> alkoxy) group, an amino(C<sub>1-6</sub> alkyl) group, an amino(C<sub>1-6</sub> alkoxy) group, a mono or di(C<sub>1-6</sub> alkyl)amino group, a mono or di[hydroxy(C<sub>1-6</sub> alkyl)]amino group, a C<sub>1-6</sub> alkylsulfonyl group, a C<sub>1-6</sub> alkylsulfonylamino group, a C<sub>1-6</sub> alkylsulfonylamino(C<sub>1-6</sub> alkyl) group, a carboxy group, a C<sub>2-7</sub> alkoxycarbonyl group, a sulfamoyl group and  $-\text{CON}(\text{R}^{\text{H}})\text{R}^{\text{I}}$

[substituent group  $\beta$ ]

a halogen atom, a hydroxy group, an amino group, a C<sub>1-6</sub> alkoxy group, a C<sub>1-6</sub> alkylthio group, a halo(C<sub>1-6</sub> alkoxy) group, a halo(C<sub>1-6</sub> alkylthio) group, a hydroxy(C<sub>1-6</sub> alkoxy) group, a hydroxy(C<sub>1-6</sub> alkylthio) group, an amino(C<sub>1-6</sub> alkoxy) group, an amino(C<sub>1-6</sub> alkylthio) group, a mono or di(C<sub>1-6</sub> alkyl)amino group, a mono or di[hydroxy(C<sub>1-6</sub> alkyl)]amino group, an ureido group, a sulfamide group, a mono or di(C<sub>1-6</sub> alkyl)ureido group, a mono or di[hydroxy(C<sub>1-6</sub> alkyl)]ureido group, a mono or di(C<sub>1-6</sub> alkyl)sulfamide group, a mono or di[hydroxy(C<sub>1-6</sub> alkyl)]-sulfamide group, a C<sub>2-7</sub> acylamino group, an amino(C<sub>2-7</sub> acylamino) group, a C<sub>1-6</sub> alkylsulfonyl group, a C<sub>1-6</sub> alkylsulfonylamino group, a carbamoyl(C<sub>1-6</sub> alkylsulfonylamino) group, a carboxy group, a C<sub>2-7</sub> alkoxycarbonyl group,  $-\text{CON}(\text{R}^{\text{H}})\text{R}^{\text{I}}$ , and any of the following substituents (xxxvii) to (xxxxviii) which may have any 1 to 3 substituents selected from the above substituent group

$\alpha$  on the ring;

- (xxxvii) a C<sub>6-10</sub> aryl group, (xxxviii) C<sub>6-10</sub> aryl-O-,  
 (xxxix) a C<sub>6-10</sub> aryl(C<sub>1-6</sub> alkoxy) group, (xxxx) a C<sub>6-10</sub> aryl(C<sub>1-6</sub>  
 alkylthio) group, (xxxxi) a heteroaryl group, (xxxxii)  
 5 heteroaryl-O-, (xxxiii) a C<sub>3-7</sub> cycloalkyl group, (xxxiv) C<sub>3-7</sub>  
 cycloalkyl-O-, (xxxv) a heterocycloalkyl group, (xxxvi)  
 heterocycloalkyl-O-, (xxxvii) an aliphatic cyclic amino group  
 or (xxxviii) an aromatic cyclic amino group,

- R<sup>H</sup> and R<sup>I</sup> independently represent a hydrogen atom or a  
 10 C<sub>1-6</sub> alkyl group which may have any 1 to 3 substituents selected  
 from the following substituent group  $\gamma$ ; or both of R<sup>H</sup> and R<sup>I</sup>  
 bind together with the neighboring nitrogen atom to form an  
 aliphatic cyclic aminogroup which may have any 1 to 3 substituents  
 selected from the following substituent group  $\delta$ ;

- 15 [substituent group  $\gamma$ ]

- a halogen atom, a hydroxy group, an amino group, a C<sub>1-6</sub>  
 alkoxy group, a halo(C<sub>1-6</sub> alkoxy) group, a hydroxy(C<sub>1-6</sub> alkoxy)  
 group, an amino(C<sub>1-6</sub> alkoxy) group, a mono or di(C<sub>1-6</sub> alkyl) amino  
 group, a mono or di[hydroxy(C<sub>1-6</sub> alkyl)] amino group, an ureido  
 20 group, a sulfamide group, a mono or di(C<sub>1-6</sub> alkyl) ureido group,  
 a mono or di[hydroxy(C<sub>1-6</sub> alkyl)] ureido group, a mono or di(C<sub>1-6</sub>  
 alkyl) sulfamide group, a mono or di[hydroxy(C<sub>1-6</sub> alkyl)]-  
 sulfamide group, a C<sub>2-7</sub> acylamino group, an amino(C<sub>2-7</sub> acylamino)  
 group, a C<sub>1-6</sub> alkylsulfonyl group, a C<sub>1-6</sub> alkylsulfonylamino  
 25 group, a carbamoyl(C<sub>1-6</sub> alkylsulfonylamino) group, a carboxy  
 group, a C<sub>2-7</sub> alkoxycarbonyl group and -CON(R<sup>J</sup>)R<sup>K</sup>

[substituent group  $\delta$ ]

a halogen atom, a hydroxy group, an amino group, a C<sub>1-6</sub> alkyl group, a C<sub>1-6</sub> alkoxy group, a halo(C<sub>1-6</sub> alkyl) group, a halo(C<sub>1-6</sub> alkoxy) group, a hydroxy(C<sub>1-6</sub> alkyl) group, a C<sub>2-7</sub> alkoxycarbonyl(C<sub>1-6</sub> alkyl) group, a hydroxy(C<sub>1-6</sub> alkoxy) group, an amino(C<sub>1-6</sub> alkyl) group, an amino(C<sub>1-6</sub> alkoxy) group, a mono or di(C<sub>1-6</sub> alkyl)amino group, a mono or di[hydroxy(C<sub>1-6</sub> alkyl)]amino group, a C<sub>1-6</sub> alkylsulfonyl group, a C<sub>1-6</sub> alkylsulfonylamino group, a C<sub>1-6</sub> alkylsulfonylamino(C<sub>1-6</sub> alkyl) group, a carboxy group, a C<sub>2-7</sub> alkoxycarbonyl group, a sulfamoyl group and  $-\text{CON}(\text{R}^{\text{J}})\text{R}^{\text{K}}$

$\text{R}^{\text{J}}$  and  $\text{R}^{\text{K}}$  independently represent a hydrogen atom or a C<sub>1-6</sub> alkyl group which may have any 1 to 3 substituents selected from a hydroxy group, an amino group, a mono or di(C<sub>1-6</sub> alkyl)amino group, a C<sub>2-7</sub> alkoxycarbonyl group and a carbamoyl group; or both of  $\text{R}^{\text{J}}$  and  $\text{R}^{\text{K}}$  bind together with the neighboring nitrogen atom to form an aliphatic cyclic amino group which may have any 1 to 3 substituents selected from a hydroxy group, an amino group, a mono or di(C<sub>1-6</sub> alkyl)amino group, a C<sub>1-6</sub> alkyl group, a hydroxy(C<sub>1-6</sub> alkyl) group, a C<sub>2-7</sub> alkoxycarbonyl group, a C<sub>2-7</sub> alkoxycarbonyl(C<sub>1-6</sub> alkyl) group and a carbamoyl group, or a pharmaceutically acceptable salt thereof, or a prodrug thereof.

9. A nitrogen-containing fused-ring derivative as claimed in claim 5 or 8, wherein  $\text{R}^1$  represents a hydrogen atom, a C<sub>1-6</sub> alkyl group, a hydroxy(C<sub>1-6</sub> alkyl) group, or  $-\text{J}^{\text{a}}-\text{CONH}_2$ ;  $\text{J}^{\text{a}}$  represents a C<sub>1-6</sub> alkylene group;  $\text{R}^2$  represents a hydrogen atom, or a pharmaceutically acceptable salt thereof, or a prodrug

thereof.

10. A pharmaceutical composition comprising as an active ingredient a nitrogen-containing fused-ring derivative as  
5 claimed in any one of claims 1 to 9, or a pharmaceutically acceptable salt thereof, or a prodrug thereof.

11. A human SGLT inhibitor comprising as an active ingredient a nitrogen-containing fused-ring derivative as claimed in any  
10 one of claims 1 to 9, or a pharmaceutically acceptable salt thereof, or a prodrug thereof.

12. A human SGLT inhibitor as claimed in claim 11, wherein the SGLT is SGLT1 and/or SGLT2.

15

13. A human SGLT inhibitor as claimed in claim 11, which is an agent for the inhibition of postprandial hyperglycemia.

14. A human SGLT inhibitor as claimed in claim 11, which is  
20 an agent for the prevention or treatment of a disease associated with hyperglycemia.

15. A human SGLT inhibitor as claimed in claim 14, wherein the disease associated with hyperglycemia is a disease selected  
25 from the group consisting of diabetes, impaired glucose tolerance, diabetic complications, obesity, hyperinsulinemia, hyperlipidemia, hypercholesterolemia, hypertriglyceridemia,

lipid metabolism disorder, atherosclerosis, hypertension, congestive heart failure, edema, hyperuricemia and gout.

16. A human SGLT inhibitor as claimed in claim 11, which is  
5 an agent for the inhibition of advancing impaired glucose tolerance into diabetes in a subject.

17. A pharmaceutical composition as claimed in claim 10,  
wherein the dosage form is sustained release formulation.

10

18. A human SGLT inhibitor as claimed in claim 11, wherein  
the dosage form is sustained release formulation.

19. A method for the inhibition of postprandial hyperglycemia,  
15 which comprises administering an effective amount of a nitrogen-containing fused-ring derivative as claimed in any one of claims 1 to 9, or a pharmaceutically acceptable salt thereof, or a prodrug thereof.

20 20. A method for the prevention or treatment of a disease associated with hyperglycemia, which comprises administering an effective amount of a nitrogen-containing fused-ring derivative as claimed in any one of claims 1 to 9, or a pharmaceutically acceptable salt thereof, or a prodrug thereof.

25

21. A method for the prevention or treatment as claimed in claim 20, wherein the disease associated with hyperglycemia is

a disease selected from the group consisting of diabetes, impaired glucose tolerance, diabetic complications, obesity, hyperinsulinemia, hyperlipidemia, hypercholesterolemia, hypertriglyceridemia, lipid metabolism disorder,  
5 atherosclerosis, hypertension, congestive heart failure, edema, hyperuricemia and gout.

22. A method for the inhibition of advancing impaired glucose tolerance into diabetes in a subject, which comprises  
10 administering an effective amount of a nitrogen-containing fused-ring derivative as claimed in any one of claims 1 to 9, or a pharmaceutically acceptable salt thereof, or a prodrug thereof.

15 23. A use of a nitrogen-containing fused-ring derivative as claimed in any one of claims 1 to 9, or a pharmaceutically acceptable salt thereof, or a prodrug thereof for the manufacture of a pharmaceutical composition for the inhibition of postprandial hyperglycemia.

20

24. A use of a nitrogen-containing fused-ring derivative as claimed in any one of claims 1 to 9, or a pharmaceutically acceptable salt thereof, or a prodrug thereof for the manufacture of a pharmaceutical composition for the prevention or treatment  
25 of a disease associated with hyperglycemia.

25. A use as claimed in claim 24, wherein the disease associated



with hyperglycemia is a disease selected from the group consisting of diabetes, impaired glucose tolerance, diabetic complications, obesity, hyperinsulinemia, hyperlipidemia, hypercholesterolemia, hypertriglyceridemia, lipid metabolism disorder, atherosclerosis, hypertension, congestive heart failure, edema, hyperuricemia and gout.

26. A use of a nitrogen-containing fused-ring derivative as claimed in any one of claims 1 to 9, or a pharmaceutically acceptable salt thereof, or a prodrug thereof for the manufacture of a pharmaceutical composition for the inhibition of advancing impaired glucose tolerance into diabetes in a subject.

27. A pharmaceutical composition as claimed in claim 10, which comprises combination with at least one member selected from the group consisting of an insulin sensitivity enhancer, a glucose absorption inhibitor, a biguanide, an insulin secretion enhancer, a SGLT2 inhibitor, an insulin or insulin analogue, a glucagon receptor antagonist, an insulin receptor kinase stimulant, a tripeptidyl peptidase II inhibitor, a dipeptidyl peptidase IV inhibitor, a protein tyrosine phosphatase-1B inhibitor, a glycogen phosphorylase inhibitor, a glucose-6-phosphatase inhibitor, a fructose-bisphosphatase inhibitor, a pyruvate dehydrogenase inhibitor, a hepatic gluconeogenesis inhibitor, D-chiroinsitol, a glycogen synthase kinase-3 inhibitor, glucagon-like peptide-1, a glucagon-like peptide-1 analogue, a glucagon-like peptide-1 agonist, amylin,

an amylin analogue, an amylin agonist, an aldose reductase  
 inhibitor, an advanced glycation endproducts formation  
 inhibitor, a protein kinase C inhibitor, a  $\gamma$ -aminobutyric acid  
 receptor antagonist, a sodium channel antagonist, a transcript  
 5 factor NF- $\kappa$ B inhibitor, a lipid peroxidase inhibitor, an  
 N-acetylated- $\alpha$ -linked-acid-dipeptidase inhibitor,  
 insulin-like growth factor-I, platelet-derived growth factor,  
 a platelet-derived growth factor analogue, epidermal growth  
 factor, nerve growth factor, a carnitine derivative, uridine,  
 10 5-hydroxy-1-methylhydantoin, EGB-761, bimoclomol, sulodexide,  
 Y-128, antidiarrhoics, cathartics, a hydroxymethylglutaryl  
 coenzyme A reductase inhibitor, a fibrate, a  $\beta_3$ -adrenoceptor  
 agonist, an acyl-coenzyme A cholesterol acyltransferase  
 inhibitor, probcol, a thyroid hormone receptor agonist, a  
 15 cholesterol absorption inhibitor, a lipase inhibitor, a  
 microsomal triglyceride transfer protein inhibitor, a  
 lipoxygenase inhibitor, a carnitine palmitoyl-transferase  
 inhibitor, a squalene synthase inhibitor, a low-density  
 lipoprotein receptor enhancer, a nicotinic acid derivative, a  
 20 bile acid sequestrant, a sodium/bile acid cotransporter  
 inhibitor, a cholesterol ester transfer protein inhibitor, an  
 appetite suppressant, an angiotensin-converting enzyme  
 inhibitor, a neutral endopeptidase inhibitor, an angiotensin  
 II receptor antagonist, an endothelin-converting enzyme  
 25 inhibitor, an endothelin receptor antagonist, a diuretic agent,  
 a calcium antagonist, a vasodilating antihypertensive agent,  
 a sympathetic blocking agent, a centrally acting

antihypertensive agent, an  $\alpha_2$ -adrenoceptor agonist, an antiplatelets agent, a uric acid synthesis inhibitor, a uricosuric agent and a urinary alkalinizer.

- 5 28. A human SGLT inhibitor as claimed in claim 11, which comprises combination with at least one member selected from the group consisting of an insulin sensitivity enhancer, a glucose absorption inhibitor, a biguanide, an insulin secretion enhancer, a SGLT2 inhibitor, an insulin or insulin analogue,
- 10 a glucagon receptor antagonist, an insulin receptor kinase stimulant, a tripeptidyl peptidase II inhibitor, a dipeptidyl peptidase IV inhibitor, a protein tyrosine phosphatase-1B inhibitor, a glycogen phosphorylase inhibitor, a glucose-6-phosphatase inhibitor, a fructose-bisphosphatase
- 15 inhibitor, a pyruvate dehydrogenase inhibitor, a hepatic gluconeogenesis inhibitor, D-chiroinsitol, a glycogen synthase kinase-3 inhibitor, glucagon-like peptide-1, a glucagon-like peptide-1 analogue, a glucagon-like peptide-1 agonist, amylin, an amylin analogue, an amylin agonist, an aldose reductase
- 20 inhibitor, an advanced glycation endproducts formation inhibitor, a protein kinase C inhibitor, a  $\gamma$ -aminobutyric acid receptor antagonist, a sodium channel antagonist, a transcript factor NF- $\kappa$ B inhibitor, a lipid peroxidase inhibitor, an N-acetylated- $\alpha$ -linked-acid-dipeptidase inhibitor,
- 25 insulin-like growth factor-I, platelet-derived growth factor, a platelet-derived growth factor analogue, epidermal growth factor, nerve growth factor, a carnitine derivative, uridine,

5-hydroxy-1-methylhydantoin, EGB-761, bimoclomol, sulodexide, Y-128, antidiarrhoics, cathartics, a hydroxymethylglutaryl coenzyme A reductase inhibitor, a fibrate, a  $\beta_3$ -adrenoceptor agonist, an acyl-coenzyme A cholesterol acyltransferase inhibitor, probcol, a thyroid hormone receptor agonist, a cholesterol absorption inhibitor, a lipase inhibitor, a microsomal triglyceride transfer protein inhibitor, a lipoxygenase inhibitor, a carnitine palmitoyl-transferase inhibitor, a squalene synthase inhibitor, a low-density lipoprotein receptor enhancer, a nicotinic acid derivative, a bile acid sequestrant, a sodium/bile acid cotransporter inhibitor, a cholesterol ester transfer protein inhibitor, an appetite suppressant, an angiotensin-converting enzyme inhibitor, a neutral endopeptidase inhibitor, an angiotensin II receptor antagonist, an endothelin-converting enzyme inhibitor, an endothelin receptor antagonist, a diuretic agent, a calcium antagonist, a vasodilating antihypertensive agent, a sympathetic blocking agent, a centrally acting antihypertensive agent, an  $\alpha_2$ -adrenoceptor agonist, an antiplatelets agent, a uric acid synthesis inhibitor, a uricosuric agent and a urinary alkalinizer.

29. A method for the inhibition of postprandial hyperglycemia as claimed in claim 19, which comprises administering in combination with at least one member selected from the group consisting of an insulin sensitivity enhancer, a glucose absorption inhibitor, a biguanide, an insulin secretion enhancer,

a SGLT2 inhibitor, an insulin or insulin analogue, a glucagon  
 receptor antagonist, an insulin receptor kinase stimulant, a  
 tripeptidyl peptidase II inhibitor, a dipeptidyl peptidase IV  
 inhibitor, a protein tyrosine phosphatase-1B inhibitor, a  
 5 glycogen phosphorylase inhibitor, a glucose-6-phosphatase  
 inhibitor, a fructose-bisphosphatase inhibitor, a pyruvate  
 dehydrogenase inhibitor, a hepatic gluconeogenesis inhibitor,  
 D-chiroinsitol, a glycogen synthase kinase-3 inhibitor,  
 glucagon-like peptide-1, a glucagon-like peptide-1 analogue,  
 10 a glucagon-like peptide-1 agonist, amylin, an amylin analogue,  
 an amylin agonist, an aldose reductase inhibitor, an advanced  
 glycation endproducts formation inhibitor, a protein kinase C  
 inhibitor, a  $\gamma$ -aminobutyric acid receptor antagonist, a sodium  
 channel antagonist, a transcript factor NF- $\kappa$ B inhibitor, a lipid  
 15 peroxidase inhibitor, an  
 N-acetylated- $\alpha$ -linked-acid-dipeptidase inhibitor,  
 insulin-like growth factor-I, platelet-derived growth factor,  
 a platelet-derived growth factor analogue, epidermal growth  
 factor, nerve growth factor, a carnitine derivative, uridine,  
 20 5-hydroxy-1-methylhydantoin, EGB-761, bimoclomol, sulodexide,  
 Y-128, antidiarrhoics, cathartics, a hydroxymethylglutaryl  
 coenzyme A reductase inhibitor, a fibrate, a  $\beta_3$ -adrenoceptor  
 agonist, an acyl-coenzyme A cholesterol acyltransferase  
 inhibitor, probcol, a thyroid hormone receptor agonist, a  
 25 cholesterol absorption inhibitor, a lipase inhibitor, a  
 microsomal triglyceride transfer protein inhibitor, a  
 lipoxxygenase inhibitor, a carnitine palmitoyl-transferase

inhibitor, a squalene synthase inhibitor, a low-density lipoprotein receptor enhancer, a nicotinic acid derivative, a bile acid sequestrant, a sodium/bile acid cotransporter inhibitor, a cholesterol ester transfer protein inhibitor, an  
 5 appetite suppressant, an angiotensin-converting enzyme inhibitor, a neutral endopeptidase inhibitor, an angiotensin II receptor antagonist, an endothelin-converting enzyme inhibitor, an endothelin receptor antagonist, a diuretic agent, a calcium antagonist, a vasodilating antihypertensive agent,  
 10 a sympathetic blocking agent, a centrally acting antihypertensive agent, an  $\alpha_2$ -adrenoceptor agonist, an antiplatelets agent, a uric acid synthesis inhibitor, a uricosuric agent and a urinary alkalinizer.

15 30. A method for the prevention or treatment of a disease associated with hyperglycemia as claimed in claim 20, which comprises administering in combination with at least one member selected from the group consisting of an insulin sensitivity enhancer, a glucose absorption inhibitor, a biguanide, an insulin  
 20 secretion enhancer, a SGLT2 inhibitor, an insulin or insulin analogue, a glucagon receptor antagonist, an insulin receptor kinase stimulant, a tripeptidyl peptidase II inhibitor, a dipeptidyl peptidase IV inhibitor, a protein tyrosine phosphatase-1B inhibitor, a glycogen phosphorylase inhibitor,  
 25 a glucose-6-phosphatase inhibitor, a fructose-bisphosphatase inhibitor, a pyruvate dehydrogenase inhibitor, a hepatic gluconeogenesis inhibitor, D-chiroinsitol, a glycogen synthase

kinase-3 inhibitor, glucagon-like peptide-1, a glucagon-like peptide-1 analogue, a glucagon-like peptide-1 agonist, amylin, an amylin analogue, an amylin agonist, an aldose reductase inhibitor, an advanced glycation endproducts formation

5 inhibitor, a protein kinase C inhibitor, a  $\gamma$ -aminobutyric acid receptor antagonist, a sodium channel antagonist, a transcript factor NF- $\kappa$ B inhibitor, a lipid peroxidase inhibitor, an N-acetylated- $\alpha$ -linked-acid-dipeptidase inhibitor, insulin-like growth factor-I, platelet-derived growth factor,

10 a platelet-derived growth factor analogue, epidermal growth factor, nerve growth factor, a carnitine derivative, uridine, 5-hydroxy-1-methylhydantoin, EGB-761, bimoclomol, sulodexide, Y-128, antidiarrhoics, cathartics, a hydroxymethylglutaryl coenzyme A reductase inhibitor, a fibrate, a  $\beta_3$ -adrenoceptor

15 agonist, an acyl-coenzyme A cholesterol acyltransferase inhibitor, probcol, a thyroid hormone receptor agonist, a cholesterol absorption inhibitor, a lipase inhibitor, a microsomal triglyceride transfer protein inhibitor, a lipoxxygenase inhibitor, a carnitine palmitoyl-transferase

20 inhibitor, a squalene synthase inhibitor, a low-density lipoprotein receptor enhancer, a nicotinic acid derivative, a bile acid sequestrant, a sodium/bile acid cotransporter inhibitor, a cholesterol ester transfer protein inhibitor, an appetite suppressant, an angiotensin-converting enzyme

25 inhibitor, a neutral endopeptidase inhibitor, an angiotensin II receptor antagonist, an endothelin-converting enzyme inhibitor, an endothelin receptor antagonist, a diuretic agent,

a calcium antagonist, a vasodilating antihypertensive agent, a sympathetic blocking agent, a centrally acting antihypertensive agent, an  $\alpha_2$ -adrenoceptor agonist, an antiplatelets agent, a uric acid synthesis inhibitor, a uricosuric agent and a urinary alkalinizer.

31. A method for the inhibition of advancing impaired glucose tolerance into diabetes in a subject as claimed in claim 22, which comprises administering in combination with at least one member selected from the group consisting of an insulin sensitivity enhancer, a glucose absorption inhibitor, a biguanide, an insulin secretion enhancer, a SGLT2 inhibitor, an insulin or insulin analogue, a glucagon receptor antagonist, an insulin receptor kinase stimulant, a tripeptidyl peptidase II inhibitor, a dipeptidyl peptidase IV inhibitor, a protein tyrosine phosphatase-1B inhibitor, a glycogen phosphorylase inhibitor, a glucose-6-phosphatase inhibitor, a fructose-bisphosphatase inhibitor, a pyruvate dehydrogenase inhibitor, a hepatic gluconeogenesis inhibitor, D-chiroinsitol, a glycogen synthase kinase-3 inhibitor, glucagon-like peptide-1, a glucagon-like peptide-1 analogue, a glucagon-like peptide-1 agonist, amylin, an amylin analogue, an amylin agonist, an aldose reductase inhibitor, an advanced glycation endproducts formation inhibitor, a protein kinase C inhibitor, a  $\gamma$ -aminobutyric acid receptor antagonist, a sodium channel antagonist, a transcript factor NF- $\kappa$ B inhibitor, a lipid peroxidase inhibitor, an N-acetylated- $\alpha$ -linked-acid-



dipeptidase inhibitor, insulin-like growth factor-I,  
 platelet-derived growth factor, a platelet-derived growth  
 factor analogue, epidermal growth factor, nerve growth factor,  
 a carnitine derivative, uridine, 5-hydroxy-1-methylhydantoin,  
 5 EGB-761, bimoclomol, sulodexide, Y-128, antidiarrhoics,  
 cathartics, a hydroxymethylglutaryl coenzyme A reductase  
 inhibitor, a fibrate, a  $\beta_3$ -adrenoceptor agonist, an  
 acyl-coenzyme A cholesterol acyltransferase inhibitor, probcol,  
 a thyroid hormone receptor agonist, a cholesterol absorption  
 10 inhibitor, a lipase inhibitor, a microsomal triglyceride  
 transfer protein inhibitor, a lipoxygenase inhibitor, a  
 carnitine palmitoyl-transferase inhibitor, a squalene synthase  
 inhibitor, a low-density lipoprotein receptor enhancer, a  
 nicotinic acid derivative, a bile acid sequestrant, a sodium/bile  
 15 acid cotransporter inhibitor, a cholesterol ester transfer  
 protein inhibitor, an appetite suppressant, an  
 angiotensin-converting enzyme inhibitor, a neutral  
 endopeptidase inhibitor, an angiotensin II receptor antagonist,  
 an endothelin-converting enzyme inhibitor, an endothelin  
 20 receptor antagonist, a diuretic agent, a calcium antagonist,  
 a vasodilating antihypertensive agent, a sympathetic blocking  
 agent, a centrally acting antihypertensive agent, an  
 $\alpha_2$ -adrenoceptor agonist, an antiplatelets agent, a uric acid  
 synthesis inhibitor, a uricosuric agent and a urinary  
 25 alkalinizer.

32. A use of (A) a nitrogen-containing fused-ring derivative

as claimed in any one of claims 1 to 9, or a pharmaceutically acceptable salt thereof, or a prodrug thereof and (B) at least one member selected from the group consisting of an insulin sensitivity enhancer, a glucose absorption inhibitor, a  
5 biguanide, an insulin secretion enhancer, a SGLT2 inhibitor, an insulin or insulin analogue, a glucagon receptor antagonist, an insulin receptor kinase stimulant, a tripeptidyl peptidase II inhibitor, a dipeptidyl peptidase IV inhibitor, a protein tyrosine phosphatase-1B inhibitor, a glycogen phosphorylase  
10 inhibitor, a glucose-6-phosphatase inhibitor, a fructose-bisphosphatase inhibitor, a pyruvate dehydrogenase inhibitor, a hepatic gluconeogenesis inhibitor, D-chiroinsitol, a glycogen synthase kinase-3 inhibitor, glucagon-like peptide-1, a glucagon-like peptide-1 analogue, a glucagon-like peptide-1  
15 agonist, amylin, an amylin analogue, an amylin agonist, an aldose reductase inhibitor, an advanced glycation endproducts formation inhibitor, a protein kinase C inhibitor, a  $\gamma$ -aminobutyric acid receptor antagonist, a sodium channel antagonist, a transcript factor NF- $\kappa$ B inhibitor, a lipid  
20 peroxidase inhibitor, an N-acetylated- $\alpha$ -linked-acid-dipeptidase inhibitor, insulin-like growth factor-I, platelet-derived growth factor, a platelet-derived growth factor analogue, epidermal growth factor, nerve growth factor, a carnitine derivative, uridine, 5-hydroxy-1-methylhydantoin,  
25 EGB-761, bimoclomol, sulodexide, Y-128, antidiarrhoics, cathartics, a hydroxymethylglutaryl coenzyme A reductase inhibitor, a fibrate, a  $\beta_3$ -adrenoceptor agonist, an

acyl-coenzyme A cholesterol acyltransferase inhibitor, probcol,  
 a thyroid hormone receptor agonist, a cholesterol absorption  
 inhibitor, a lipase inhibitor, a microsomal triglyceride  
 transfer protein inhibitor, a lipoxygenase inhibitor, a  
 5 carnitine palmitoyl-transferase inhibitor, a squalene synthase  
 inhibitor, a low-density lipoprotein receptor enhancer, a  
 nicotinic acid derivative, a bile acid sequestrant, a sodium/bile  
 acid cotransporter inhibitor, a cholesterol ester transfer  
 protein inhibitor, an appetite suppressant, an  
 10 angiotensin-converting enzyme inhibitor, a neutral  
 endopeptidase inhibitor, an angiotensin II receptor antagonist,  
 an endothelin-converting enzyme inhibitor, an endothelin  
 receptor antagonist, a diuretic agent, a calcium antagonist,  
 a vasodilating antihypertensive agent, a sympathetic blocking  
 15 agent, a centrally acting antihypertensive agent, an  
 $\alpha_2$ -adrenoceptor agonist, an antiplatelets agent, a uric acid  
 synthesis inhibitor, a uricosuric agent and a urinary alkalinizer,  
 for the manufacture of a pharmaceutical composition for the  
 inhibition of postprandial hyperglycemia.

20

33. A use of (A) a nitrogen-containing fused-ring derivative  
 as claimed in any one of claims 1 to 9, or a pharmaceutically  
 acceptable salt thereof, or a prodrug thereof and (B) at least  
 one member selected from the group consisting of an insulin  
 25 sensitivity enhancer, a glucose absorption inhibitor, a  
 biguanide, an insulin secretion enhancer, a SGLT2 inhibitor,  
 an insulin or insulin analogue, a glucagon receptor antagonist,

an insulin receptor kinase stimulant, a tripeptidyl peptidase  
 II inhibitor, a dipeptidyl peptidase IV inhibitor, a protein  
 tyrosine phosphatase-1B inhibitor, a glycogen phosphorylase  
 inhibitor, a glucose-6-phosphatase inhibitor, a  
 5 fructose-bisphosphatase inhibitor, a pyruvate dehydrogenase  
 inhibitor, a hepatic gluconeogenesis inhibitor, D-chiroinsitol,  
 a glycogen synthase kinase-3 inhibitor, glucagon-like peptide-1,  
 a glucagon-like peptide-1 analogue, a glucagon-like peptide-1  
 agonist, amylin, an amylin analogue, an amylin agonist, an aldose  
 10 reductase inhibitor, an advanced glycation endproducts  
 formation inhibitor, a protein kinase C inhibitor, a  
 $\gamma$ -aminobutyric acid receptor antagonist, a sodium channel  
 antagonist, a transcript factor NF- $\kappa$ B inhibitor, a lipid  
 peroxidase inhibitor, an *N*-acetylated- $\alpha$ -linked-acid-  
 15 dipeptidase inhibitor, insulin-like growth factor-I,  
 platelet-derived growth factor, a platelet-derived growth  
 factor analogue, epidermal growth factor, nerve growth factor,  
 a carnitine derivative, uridine, 5-hydroxy-1-methylhydantoin,  
 EGB-761, bimoclomol, sulodexide, Y-128, antidiarrhoics,  
 20 cathartics, a hydroxymethylglutaryl coenzyme A reductase  
 inhibitor, a fibrate, a  $\beta_3$ -adrenoceptor agonist, an  
 acyl-coenzyme A cholesterol acyltransferase inhibitor, probcol,  
 a thyroid hormone receptor agonist, a cholesterol absorption  
 inhibitor, a lipase inhibitor, a microsomal triglyceride  
 25 transfer protein inhibitor, a lipoxigenase inhibitor, a  
 carnitine palmitoyl-transferase inhibitor, a squalene synthase  
 inhibitor, a low-density lipoprotein receptor enhancer, a

nicotinic acid derivative, a bile acid sequestrant, a sodium/bile acid cotransporter inhibitor, a cholesterol ester transfer protein inhibitor, an appetite suppressant, an angiotensin-converting enzyme inhibitor, a neutral endopeptidase inhibitor, an angiotensin II receptor antagonist, an endothelin-converting enzyme inhibitor, an endothelin receptor antagonist, a diuretic agent, a calcium antagonist, a vasodilating antihypertensive agent, a sympathetic blocking agent, a centrally acting antihypertensive agent, an  $\alpha_2$ -adrenoceptor agonist, an antiplatelet agent, a uric acid synthesis inhibitor, a uricosuric agent and a urinary alkalinizer, for the manufacture of a pharmaceutical composition for the prevention or treatment of a disease associated with hyperglycemia.

15

34. A use of (A) a nitrogen-containing fused-ring derivative as claimed in any one of claims 1 to 9, or a pharmaceutically acceptable salt thereof, or a prodrug thereof and (B) at least one member selected from the group consisting of an insulin sensitivity enhancer, a glucose absorption inhibitor, a biguanide, an insulin secretion enhancer, a SGLT2 inhibitor, an insulin or insulin analogue, a glucagon receptor antagonist, an insulin receptor kinase stimulant, a tripeptidyl peptidase II inhibitor, a dipeptidyl peptidase IV inhibitor, a protein tyrosine phosphatase-1B inhibitor, a glycogen phosphorylase inhibitor, a glucose-6-phosphatase inhibitor, a fructose-bisphosphatase inhibitor, a pyruvate dehydrogenase

inhibitor, a hepatic gluconeogenesis inhibitor, D-chiroinsitol, a glycogen synthase kinase-3 inhibitor, glucagon-like peptide-1, a glucagon-like peptide-1 analogue, a glucagon-like peptide-1 agonist, amylin, an amylin analogue, an amylin agonist, an aldose reductase inhibitor, an advanced glycation endproducts formation inhibitor, a protein kinase C inhibitor, a  $\gamma$ -aminobutyric acid receptor antagonist, a sodium channel antagonist, a transcript factor NF- $\kappa$ B inhibitor, a lipid peroxidase inhibitor, an N-acetylated- $\alpha$ -linked-acid-dipeptidase inhibitor, insulin-like growth factor-I, platelet-derived growth factor, a platelet-derived growth factor analogue, epidermal growth factor, nerve growth factor, a carnitine derivative, uridine, 5-hydroxy-1-methylhydantoin, EGB-761, bimoclomol, sulodexide, Y-128, antidiarrhoics, cathartics, a hydroxymethylglutaryl coenzyme A reductase inhibitor, a fibrate, a  $\beta_3$ -adrenoceptor agonist, an acyl-coenzyme A cholesterol acyltransferase inhibitor, probcol, a thyroid hormone receptor agonist, a cholesterol absorption inhibitor, a lipase inhibitor, a microsomal triglyceride transfer protein inhibitor, a lipoxygenase inhibitor, a carnitine palmitoyl-transferase inhibitor, a squalene synthase inhibitor, a low-density lipoprotein receptor enhancer, a nicotinic acid derivative, a bile acid sequestrant, a sodium/bile acid cotransporter inhibitor, a cholesterol ester transfer protein inhibitor, an appetite suppressant, an angiotensin-converting enzyme inhibitor, a neutral endopeptidase inhibitor, an angiotensin II receptor antagonist,

an endothelin-converting enzyme inhibitor, an endothelin receptor antagonist, a diuretic agent, a calcium antagonist, a vasodilating antihypertensive agent, a sympathetic blocking agent, a centrally acting antihypertensive agent, an

5  $\alpha_2$ -adrenoceptor agonist, an antiplatelets agent, a uric acid synthesis inhibitor, a uricosuric agent and a urinary alkalinizer, for the manufacture of a pharmaceutical composition for the inhibition of advancing impaired glucose tolerance into diabetes in a subject.